

# Open House Interactive Demo: Traffic Hero

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The *Guitar Hero*<sup>®</sup> video game, along with other guitar simulators, has been steadily gaining popularity over the past few years, especially among youth. The objective of the game is to press buttons on the guitar-shaped controller in time with the music. Specifically, chords are represented by circles (hereafter called "fret buttons") moving along strings. As the fret buttons move along their respective strings, the user is expected to duplicate this arrangement with their fingers on the guitar controller in time, until the next chord (or single string). This simple, yet addictive exercise captures immense amounts of the player's time, often resulting in the person's complete isolation and lack of any additional abilities or skills.

In an attempt to make better use of such a seemingly esoteric skill set, a traffic data collection game is proposed based on the *Guitar Hero*<sup>®</sup> concept. Realizing the similarities between the fret buttons and vehicles, and guitar strings and highway lanes, the basic premise of the game becomes apparent. There are some inherent differences that must be mitigated, however. Instead of users following the music and changing chords as fast as they appear, a zone convention is used. When vehicles enter a zone defined on any of the lanes, the user must press the appropriate button signifying that zone. A variety of control options are possible: the user can simply press the buttons as the vehicles arrive, or, much like *Guitar Hero*<sup>®</sup>, the user can select all the occupied zones at once. Upon selecting the occupied zones, a point in the center of the zone will be tracked in the following frames. If the selected point goes on to move forward, the user was successful in marking a vehicle. If the selected point is not moving, then the user did not catch the vehicle in time. Users are awarded points for successfully detecting vehicles while penalized for missing vehicles and double-counting.

Naturally, the game is increasingly more difficult with additional lanes, especially if they contain opposing traffic movements. Figure 1 demonstrates the beta implementation of Traffic Hero with three defined zones. Yellow circles indicate successfully selected vehicles. Missing vehicles can be determined through the use of a detection

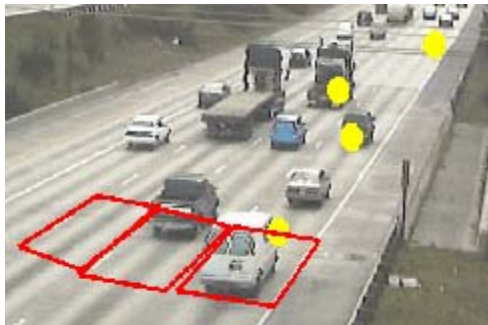


Figure 1: Beta Version of Traffic Hero

algorithm, or, preferably, a second player. The second player would not necessarily have to compete with the first, but could also help in detection - using a scheme where both players have to agree on a detection for it to count. The objective of the game would then be to obtain the maximum score for a taped segment. Otherwise, players could compete against one another using live video feeds.

In addition to providing an outlet for *Guitar Hero*<sup>®</sup> skills, the game can act as a useful data gathering and verification medium. Especially if provided with a live video feed, the collected trajectories (from the yellow circles) can be used to measure the current speeds and merging patterns along a segment of known length, while the counts obtained could help verify and potentially teach existing vehicle detection algorithms.